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ON THE MOTIONS AND PERIODIC TIMES OF COMETS.

The following interesting article on comets, is worthy of attentive perusal. Our readers will there find the reason why the "great comet" did not appear two years ago, as predicted by some persons who knew nothing about it.

From Herschell's Treatise on Astronomy.

For the most part, it is found that the motions of comets may be sufficiently well represented by parabolic orbits,—that is to say, ellipses whose axes are of infinite length, or, at least, so very long that no appreciable error in the calculation of their motions, during all the time they continue visible, would be incurred by supposing them actually infinite. The parabola is that conic section which is the limit between the ellipse on the one hand, which returns into itself, and the hyperbola on the other, which runs out to infinity. A comet, therefore, which should describe an elliptic path, however long its axis, must *have* visited the sun before, and must again return (unless disturbed) in some determinate period,—but should its orbit be of the hyperbolic character, when once it has passed its perihelion, it could never more return within the sphere of our observation, but must run off to visit other systems, or be lost in the immensity of space. A very few comets have been ascertained to move in hyperbolas, but many more in ellipses. These then in so far as their orbits can remain unaltered by the attractions of the planets, must be regarded as permanent members of our system.

The most remarkable of these is the comet of Halley, so called from the celebrated Edmund Halley, who, on calculating its elements from its perihelion passage in 1682, when it appeared in great splendor, with a tail 30° in length, was led to conclude its identity with the great comets of 1531 and 1607, whose elements he had also ascertained. The intervals of these successive apparations being 75 and 76 years, Halley was encouraged to *predict* its reappearance about the year 1759. So remarkable a prediction could not fail to attract the attention of all astronomers, and as the time approached, it became extremely interesting to know whether the attractions of the larger planets might not materially interfere with its orbitual motion. The computation of their influence from the Newtonian law of gravity, a most difficult and intricate piece of calculation, was undertaken and accomplished by Clairaut, who found that the action of Saturn would retard its return by 100 days, and that of Jupiter by no less than 518, making in all 618 days, by which the expected return would happen later than on the supposition of its retaining an unaltered period—and that, in short, the time of the expected perihelion passage would take place within a month, one way or other, of the middle of April, 1759. It actually happened on the 12th of March in that year. Its next return to the perihelion has been calculated by Messrs. Damoiseau and Pontecoulaut, and fixed by the former on the fourth, and the latter on the seventh of November, 1835, about a month or six weeks before which time it may be expected to become visible in our hemisphere; and as it will approach pretty near the earth, will very probably exhibit a brilliant appearance, though, to judge from the successive degradations of its apparent size and the length of its tail in its several returns since its first appearances on record (in 1305, 1456 &c.) we are not now to expect any of those vast and awful phenomena which threw our remote ancestors of the middle ages into agonies of superstitious terror, and caused public prayers to be put up in the churches against the comet and its malignant agencies.

More recently, two comets have been especially identified as having performed several revolutions about the sun, and as having been not only observed and recorded in preceding revolutions, without knowledge of this remarkable peculiarity, but have had already several times their returns predicted, and have scrupulously kept to their appointments. The first of these is the comet of Encke, so called from Professor Encke, of Berlin, who first ascertained its periodical return. It revolves in an ellipse of great eccentricity, inclined at an angle of about 13° 22′ to the plane of the ecliptic, and in the short period of 1207 days, or about 3⅓ years. This remarkable discovery was made on the occasion of its fourth recorded appearance, in 1819. From the ellipse then calculated by Encke, its return in 1822 was predicted by him, and observed at Paramatta, in New South Wales, by M. Rumker, being invisible in Europe: since which it has been repredicted, and reobserved in all the principal observatories, both in the northern and southern hemispheres, in 1825, 1828 and 1832. Its next return will be in 1835.

On comparing the intervals between the successive perihelion passages of this comet, after allowing in the most careful and exact manner for all the disturbances due to the actions of the planets, a very singular fact has come to light, viz: that the periods are continually diminishing, or, in other words, the mean distance from the sun, or the major axis of the ellipse, dwindling by slow but regular degrees. This is evidently the effect which would be produced by a resistance experienced by the comet from a very rare ethereal medium pervading the regions in which it moves; for such resistance, by diminishing its actual velocity, would diminish also its centrifugal force, and thus give the sun more power over it to draw it nearer. Accordingly (no other mode of accounting for the phenomenon in question appearing,) this is the solution proposed by Encke, and generally received. It will, therefore, probably fall ultimately into the sun, should it not first be dissipated altogether—a thing no way improbable, when the lightness of its materials is considered, and which seems authorized by the observed fact of its having been less and less conspicuous at each reappearance.

The other comet of short period which has lately been discovered is that of *Biela*, so called from M. Biela, of Josephstadt, who first arrived at this interesting conclusion. It is identical with comets which appeared in 1789, 1795 &c., and describes its moderately eccentric ellipse about the sun in 6¾ years; and the last apparation having taken place according to the prediction in 1832, the next will be in 1838. It is a small insignificant comet, without a tail, or any appearance of a solid nucleus whatever. Its orbit, by a remarkable coincidence, very nearly intersects that of the earth; and had the latter, at the time of its passage in 1832, been a month in advance of its actual place, it would have passed through the comet—a singular rencontre, perhaps not unattended with danger.*

* Should calculation establish the fact of a resistance experienced also by this comet, the subject of periodical comets will assume an extraordinary degree of interest. It cannot be doubted that many more will be discovered, and by their resistance questions will come to be decided, such as the following:—What is the law of density of the resisting medium which surrounds the sun? Is it at rest or in motion? If the latter, in what direction does it move? Circularly round the sun, or traversing space? If circularly, in what plane? It is obvious that a circular or vorticose motion of the ether

Comets, in passing among and near the planets, are materially drawn aside from their courses, and in some cases have their orbits entirely changed. This is remarkably the case with Jupiter, which seems, by some strange fatality, to be constantly in their way, and to serve as a perpetual stumbling block to them. In the case of the remarkable comet of 1770, which was found by Lexell to revolve in a moderate ellipse in the period of about five years, and whose return was predicted by him accordingly, the prediction was disappointed by the comet actually getting entangled among the satellites of Jupiter, and being completely thrown out of its orbit by the attraction of that planet, and forced into a much larger ellipse. By this extraordinary rencontre, *the motions of the satellites suffered not the least perceptible derangement*—a sufficient proof of the smallness of the comet's mass.

It remains to say a few words on the actual dimensions of comets. The calculation of the diameters of their heads, and the lengths and breadths of their tails, offers not the slightest difficulty when once the elements of their orbits are known, for by these we know their real distances from the earth at any time, and the true direction of the tail, which we see only foreshortened. Now calculations instituted on these principles, lead to the surprising fact, that the comets are by far the most voluminous bodies in our system. The following are the dimensions of some of those which have been made the subjects of such inquiry.

The tail of the great comet of 1680, immediately after its perihelion passage, was found by Newton to have been no less than 20,000,000 of leagues in length, and to have occupied only two days in its emission from the comet's body! a decisive proof this, of its being darted forth by some active force, the origin of which, to judge from the direction of the tail, must be sought in the sun itself. Its greatest length amounted to 41,000,000 leagues, a length much exceeding the whole interval between the sun and earth. The tail of the comet of 1769 extended 16,000,000 leagues, and that of the great comet of 1811, 36,000,000. The portion of the head of this last comprised within the transparent atmospheric envelope which separated it from the tail was 180,000 leagues in diameter. It is hardly conceivable that matter once projected to such enormous distances should ever be collected again by the feeble attraction of such a body as a comet—a consideration which accounts for the rapid progressive diminution of the tails of such as have been frequently observed.

A singular circumstance has been remarked respecting the change of dimensions of the comet of Encke in its progress to and retreat from the sun: viz. that the real diameter of the visible nebulosity undergoes a rapid contraction as it approaches, and an equally rapid dilatation as it recedes from the sun. M. Valz, who, among others, had noticed this fact, has accounted for it by supposing a real compression or condensation of volume, owing to the pressure of an ethereal medium growing more dense in the sun's neighborhood. It is very possible, however, that the change may consist in no real expansion or condensation of volume (further than is due to the convergence or divergence of the different parabolas described by each of its molecules to or from a common vertex,) but may rather indicate the alternate conversion of evaporable materials in the upper regions of a transparent atmosphere, into the states of visible cloud and invisible gas, by the mere effects of heat and cold. But it is time to quit a subject so mysterious, and open to such endless speculation.

would *accelerate some comets or retard others*, according as their revolution was, relative to such motion, direct or retrograde. Supposing the neighborhood of the sun to be filled with a material fluid, it is not conceivable that the circulation of the planets in it for ages should not have impressed upon it some degree of rotation in their own direction. And this may preserve them from the extreme effects of accumulated resistance.—*Author.*

HISTORICAL EULOGY ON THE MARQUIS DE LAPLACE,

Delivered at a public session of the Royal Academy of Sciences, June 15, 1829, by M. Baron Fourier.

(*Concluded from page* 155.)

After having cited discoveries so brilliant, it will be useless to add that M. Laplace belonged to all the great academies of Europe.

I could also, I perhaps ought, to recall the high political dignities with which he was clothed; but this enumeration belongs only indirectly to the object of this discourse. It is the great GEOMETER, whose memory we celebrate. We have separated the immortal author of the *Mecanique Celeste* from all the accidental facts that interest neither his glory nor his genius. In reality, gentlemen, of what consequence is it to posterity, that will have so many other details to forget, to learn whether or no Laplace was some moments minister of a great state? That which is of importance, is the eternal truths which he has discovered; it is the immutable laws of the stability of the world, and not the rank which he for some years occupied in the senate, called *conservateur*. That which is of importance, gentlemen, and still more so perhaps than his discoveries, is the examples which he has left to all those to whom the sciences are dear; it is the remembrance of this *perseverance incomparable*, that has sustained, directed, and crowned so many glorious efforts.

I will omit these accidental, and, so to speak, fortuitous circumstances, of the particulars that have no relation with the perfection of his works. But I will say, that, in the first body of state, the memory of Laplace was celebrated by an eloquent and friendly voice, whom important services rendered to the historical sciences, to letters and to the state, had a long time rendered illustrious.*

I will especially recall to mind, that literary solemnity which attracted the attention of the capital. The French Academy, uniting its suffrages to the acclamations of the country, thought that it acquired a new glory by crowning the triumphs of eloquence and of political virtue.†

At the same time she chose, as the successor of Laplace, an academician,‡ illustrious by more then one title; one who united, in literature, in history and in public administration, every kind of superiority.

Laplace enjoyed an advantage that fortune does not always grant to great men. From his first youth he was justly appreciated by his illustrious friends. We have under our eyes letters still unpublished, which teach us all the zeal which D'Alembert felt to introduce him to the military school of France, and to prepare for him, if this had been necessary, a better establishment at Berlin. President *Bochard de Saron* caused his first works to be printed. All the marks of friendship which have been given to him recall great labors and great discoveries: but nothing could contribute more to the progress of all physical knowledge, than his relation with the illustrious Lavoisier, whose name, consecrated by the history of sciences, has become an eternal object of respect and of lamentation.

These two celebrated men united their efforts. They undertook and finished very extended researches in order to measure one of the most important elements of the physical theory of heat. They made also, about this time, a long series of experiments on the dilatations of solid substances. The works of Newton sufficiently evince the high value which this great geometer attached to the *special* study of the physical sciences. Of all his successors, Laplace made the most frequent use of his experimental method; he was almost as great a *physicien* as geometer. His researches on refraction, on capillary effects, the measures of the barometer, the stable properties of electricity, the velocity of sound, the action of particles, and the pro-

* M. le Marquis de Pastoret. † M. Royer Collard.
‡ M. le Conte Daru.

perties of gas, attest that nothing in the investigation of nature could be foreign to him. He desired, above all things, the perfection of instruments; he caused to be constructed at his own expense, by a celebrated artist, a very precious astronomical instrument, and presented it to the Observatory of France.

All kinds of phenomena were perfectly familiar to him. He was connected by an old friendship with two celebrated *physiciens* whose discoveries have enlightened all the arts and all the chemical theories. History will unite the names of Berthollet and of Chaptal to that of Laplace. Their undertakings have always had for their object and for their result the enlargement of sciences the most important and the most difficult to acquire.

The gardens of Berthollet, at his mansion of Arcueil,* were not separated from those of Laplace. Sad remembrances, deep regrets have rendered illustrious this enclosure. It was there that Laplace received celebrated strangers and men of wealth, from whom science had derived or expected some benefactions; but above all, those whom a pious zeal attached to the sanctuary of sciences. Some commenced their career, others were soon to finish it. He entertained them *all* with an extreme *politesse*. He even carried it so far, as to have inspired the belief with those who knew not the whole extent of his genius, that he could himself reap some fruit from their undertakings.

In citing the mathematical works of Laplace, we ought especially to make some remarks upon the depth of his researches and the importance of his discoveries. His works are distinguished still by another character, that all readers have appreciated. I wish to speak of the *literary* merit of his compositions.

That which bears the title of *Sys ème du Monde* is remarkable for the elegant simplicity of style, and purity of language. There was still no example of this kind of productions; but we should form of it a very incorrect idea, were we to think we should be able to acquire the knowledge of the phenomena of the heavens in such writings. The suppression of signs appropriate to the language of calculation, cannot contribute to its clearness, or render the reading more easy. The work is a perfectly regular exposition of the results of a study the most profound—it is an ingenious summary of the principal discoveries. The precision of style, the choice of methods, the grandeur of the subject, give a remarkable interest to this vast tablet; but its real use is to recall to geometers, theorems, the demonstration of which was already known to them. It is, to speak correctly, a table of the contents of a mathematical treatise.

The *purely historical works* of Laplace have another object. He therein presents to geometers, with a wonderful ability, the march of the human mind in the discovery of the sciences.

The most abstract theories have, in effect, a beauty of expression which is peculiar to them; it is what we observe in many treatises of Descartes, in some pages of Galileo, of Newton and of Lagrange. The novelty of views, the elevation of thoughts, their relations with the great objects of nature engage and fill the soul. It is sufficient that the style be pure and of a noble simplicity; it is this kind of literature that Laplace has chosen; and it is certain that in this he is placed among the first ranks. If he wrote the history of great astronomical discovereis he became a model of elegance and of precision. No important feature escaped him; the expression is neither obscure nor aspiring. All that he calls great, is great in reality; all that he omits deserves not to be related.

M. Laplace retained, to a very advanced age, that wonderful memory which had made him remarkable from his first years: a boon, precious indeed, though not a necessary proo of *genius*; but still enabling him to *acquire* and to *preserve*.

He never cultivated the fine arts, but he always appreciated them. He loved the music of Italy, and the verses of Racine, and was often delighted in citing from memory, different passages from this great poet. The compositions of Raphael adorned his apartments. We find them at the side of the portraits of Descartes, Francois Viete, of Newton, of Galileo, and of Euler.

Laplace had always been accustomed to a very light diet; he gradually diminished it to an extremely small quantity. His very delicate sight required continual precautions. He, however, succeeded in preserving it without any change. These cares of himself never had any object but that of reserving all his time and all his powers for the labors of the soul. He lived for the sciences; the sciences have rendered his memory eternal.

He had contracted the habit of an excessive application of mind so injurious to health, but so necessary to deep studies: and yet he experienced no sensible debility, except in his two last years.

At the commencement of the disease under which he sunk, we remarked, with fear, a moment of delirium. The sciences still engaged his attention. He spoke with an unusual degree of earnestness on the motion of the stars, and then of an experiment in physics that he said was *capitale*, informing persons whom he thought present, that he would soon go and entertain the Academy with these questions. His strength left him more and more. His physician,* who deserved his entire confidence by superior talents and by attentions that friendship only could suggest, watched near his bed. M. Bouvard, his assistant and his friend never quitted him a single instant. Surrounded by a beloved family, under the eyes of a spouse whose tenderness had aided him in supporting the inseparable troubles of life, whose grace and sweetness of disposition had made known to him the worth of domestic happiness, he received from *M. le Marquis de Laplace*, his son, impressive testimonials of the most affecting filial piety.

He appeared deeply affected with gratitude for the reiterated marks of interest given to him by the King and Dauphin.

Those who comforted him in his last moments, reminded him of the titles of his glory, and his most brilliant discoveries.

He answered: "*Ce que nous connaissons est peu de chose: ce que nous ignorens est immense.*"† This is, at least as far as could be gathered, the sense of his last words, scarcely articulated; as to the rest, we have often heard this thought expressed, and almost in the same terms.

His last hour had arrived: the powerful genius which had so long animated him, at last separated from "this mortal coil," and returned to the skies. He expired without a struggle.

* * * * * * *

The name of Laplace honors one of our provinces already so teeming with great men, ancient Normandy. He was born March 23, 1749; he died, in the seventy-eighth year of his age, on May 5, 1827, at nine o'clock in the morning.

Shall I remind you, Gentlemen, of the deep gloom that spread like a cloud over this palace, when the fatal news was announced to you? It was the very day and hour of your wonted sittings. Each of you kept a mournful silence: each lamented the fatal blow with which the sciences had been smitten. The faces of all were directed to the very spot he had so long occupied among you. A single thought was with you; every other had become impossible. You dissolved with an unanimous vote; and at this time only, have your usual labors ever been interrupted.

It is undoubtedly beautiful, it is glorious, it is worthy of a powerful nation to decree brilliant honors to the memory of its

* *Arcueil.*—So called from the arches or arcades of the aqueduct which the Romans there built: part of the aqueduct is now standing. The remainder was rebuilt and finished, in order, as is believed, to carry water to the palace of Luxembourg. Louis XIII laid the first stone on the 17th of July, 1613. It was finished 1624.

" *L'aqueduc d'Arcueil fournit aux fontains de Paris cinquant sept pouces cubes d' eau.*"

* M. Magendie.

† "What we know is but little; what we are ignorant of is immense."

celebrated men. In the country of Newton, the ministers of State desired that the mortal remains of this great man should be solemnly deposited amid the royal sepulchres. France and Europe have offered to the memory of Laplace an expression of their regret less ostentatious, without doubt, but perhaps more touching and more true.

He has received an unaccustomed homage; he has received it from his own fellows in the bosom of a learned society which alone could appreciate all his genius. The voice of science in tears has been heard in every part of the world where philosophy has penetrated. We have before our eyes multiplied communications from all parts of Germany, England, Italy, New Holland, of the British possessions in India, of the two Americas; and we find in them the same sentiments of admiration and of regret. Certainly the universal sorrow of the sciences, so nobly and so freely expressed, has no less truth and glory than the sepulchral pomp of Westminster.

Let me be permitted, before terminating this discourse, to add here a reflection which is presented of itself, when I have brought to your recollection within these limits, the great discoveries of Herschel, but which is applied still more directly to those of Laplace.

Your successors, gentlemen, will see accomplished the great phenomena of which he has discovered the laws. They will observe in the lunar movements, the changes which he has predicted, and of which he only has been able to assign the cause. The continual observation of the satellites of Jupiter will perpetuate the memory of the discoverer of the theories which govern its course. The great inequalities of Jupiter and of Saturn, pursuing their periods, and giving to these stars new situations, will incessantly bring to mind one of his most astonishing discoveries. Here are the titles of true glory, which nothing could annihilate. The appearance of the heavens will be changed; but at these distant epochs, the glory of the discoverer will last forever: the traces of his genius will bear the seal of immortality.

I have presented to you, gentlemen, some anecdotes of an illustrious life consecrated to the glory of science; may your remembrances supply the defects of such feeble accents! may the voice of the country, may that of all humanity, be raised to celebrate the benefactors of nations, the only homage worthy of those that have been able, like Laplace, to enlarge the domains of thought, and to testify to MAN the DIGNITY OF HIS BEING, by unfolding to view THE WHOLE MAJESTY OF THE HEAVENS!

TORTOISE HARVEST OF EGGS.

At eleven in the morning the travellers landed on an island celebrated for the turtle fishery, or the "harvest of eggs," which takes place annually. Here they found encamped more than 300 Indians of different races, each tribe, distinguished by its peculiar mode of painting, keeping separate from the rest, together with a few white men who had come to purchase egg-oil from them. The missionary of Uruana, whose presence was necessary to procure a supply for the lamp of the church and keep the natives in order, received the strangers with kindness, and made the tour of the island with them; showing them, by means of a pole which he thrust into the sand, the extent of the stratum of eggs, that had been deposited wherever there were no eminences. The Indians asserted, that in coming up the Orinoco, from its mouth to the junction of the Apure, there is no place where eggs can be collected in abundance; and the only three spots where the turtles assemble annually in great numbers are situated between the mouth of the Apure and the great cataracts.

These animals do not seem to pass beyond the falls, the species found above Atures and Maypures being different.

The arrau or tortuga, which deposits the eggs that are so much valued on the Lower Orinoco, is a large fresh-water tortoise, with webbed feet, a very flat head, a deep groove between the eyes, and an upper shell composed of five central, eight lateral, and twenty-four marginal scutella or plates. The color is dark gray above and orange beneath. When of full size it weighs from forty to fifty pounds. The eggs are much larger than those of a pigeon, and are covered with a calcareous crust.

The terekay, the species which occurs above the cataracts, is much smaller. It has the same number of dorsal plates, but the color is olive green, with two spots of red mixed with yellow on the top of the head, and a prickly appendage under the chin. The eggs have an agreeable taste and are much sought after, but are not deposited in masses like those of the tortuga. This variety is found below the cataracts as well as in the Apure, the Urituco, the Guarico, and the small rivers of the llanos of Caraccas.

The period at which the arrau deposits its eggs is when the river is lowest. About the beginning of February these creatures issue from the water and warm themselves on the beach, remaining there a great part of the day. Early in the month of March they assemble on the islands where they breed, when thousands are to be seen ranged in files along the shores. The Indians place sentinels at certain distances to prevent them from being disturbed, and the people who pass in boats are told to keep in the middle of the river. The laying of the eggs begins soon after sunset, and is continued throughout the night. The animal digs a hole three feet in diameter and two in breadth with its hind feet, which are very long and furnished with crooked claws. So pressing is the desire which it feels to get rid of its burden, that great confusion prevails, and an immense number of eggs is broken. Some of the tortoises are surprised by day before they have finished the operation, and becoming insensible to danger, continue to work with the greatest diligence even in the presence of the fishers.

The Indians assemble about the beginning of April, and commence operations under the direction of the missionaries who divide the egg-ground into portions. The leading person among them first examines by means of a long pole or cane how far the bed extends, and then allots the shares. The natives remove the earth with their hands, gather up the eggs, and carry them in baskets to the camp, where they throw them in long wooden troughs filled with water. They are next broken and stirred, and remain exposed to the sun until the yolk which swims at the surface, has time to inspissate, when it is taken off and boiled. The oil thus obtained is limpid and destitute of smell, and is used for lamps as well as for cooking. The shores of the missions of Uruana furnish 1000 botijas or jars annually, and the three stations jointly may be supposed to furnish 5000. It requires 5000 eggs to fill a jar; and if we estimate at 100 or 116 the number which one tortoise produces, and allow one-third to be broken at the time of laying, we may presume that 330,000 of these animals assemble every year, and lay 33,000,000 of eggs. This calculation however is much below the truth. Many of them lay only 60 or 70; great numbers of them again are devoured by jaguars; the Indians take a away considerable quantity to eat them dried in the sun, and break nearly as many while gathering them; and, besides, the proportion that is hatched is such that Humboldt saw the whole shore near the encampment of Uruana swarming with young ones. Moreover, all the arraus do not assemble on the three shores of the encampments, but many lay elsewhere. The number which annually deposite their

eggs on the shores of the Lower Orinoco may, therefore, be estimated at little short of a million. The travellers were shown the shells of large turtles which had been emptied by the jaguars. These animals surprise them on the sand, and turn them on their back in order to devour them at their ease; they dig up the eggs also: and together with the gallinazo vulture and the herons destroy thousands of their brood. *Humboldt's Researches.*

THE ADVOCATE OF SCIENCE.

First Month 4, 1833.

TO CORRESPONDENTS.

The scientific dialogue, No. 6, from our correspondent "Q." shall appear in our next.

What has become of Barbara? Is her curiosity spent, or is she married?

TRANSPORTATION OF PERIODICALS.

A writer in the Boston Family Lyceum has been indulging in some speculations relating to the conveyance of papers and periodicals over the United States. He objects to the post office system as being too expensive; and more so than necessary, from the rapidity with which the mails are transported: our mail stages carrying a load of 1000 pounds at the rate they now proceed, and at three times the expense of conveying the same load at a moderate rate. He states that to transport this load, on the present system, the horses are changed every twelve miles. To carry the load thirty-six miles, therefore, twelve horses are required; at the rate of four miles an hour, four horses would transport this load in waggons. Hence, at a moderate speed, a load of magazines and books would be conveyed at one-third the cost of transportation by rapid mail stages; and this would greatly promote the diffusion of knowledge.

We do not accord with this writer's project, for several reasons. The first is, because the evil he complains of,—the postage on periodicals,—may be remedied by other means, without retarding their progress over the country. That is, simply by paying no postage at all. The propriety of this measure was under consideration at the last session of congress; and we can see no good reason why it was not adopted. For sure, there is no race of mortals on earth who labor so hard for the public good, and receive so little encouragement, as the members of our own honorable fraternity; and particularly such as are engaged in conducting scientific periodicals. To our entreaties for patronage, the people will tell us they can understand nothing about science, and consequently it would be nonsense for them to subscribe to our works. They will not believe, that to science are they indebted for the larger proportion of their comforts—to half starved editors and authors for all their knowledge. As for soliciting assistance from government, in any scientific enterprize, it would just be as rational to ask charity of a miser. We give it credit, however, for opening its heart so much in reply to a reasonable favor, as to tell some of us to call again. But this is not what we began to speak about. If editors were permitted to send their papers through the country free of postage, and to receive their letters with the same bounty, it would conduce more to the diffusion of knowledge, than by transporting them at the rate of four miles an hour from one end of the country to another. In some cases, our "Monthlies" "Quarterlies" and "Annuals," would be months and quarters and years in reaching their destination. No, no: we prefer the old plan, if it does cost a little more. Admitting the adoption of the one proposed, we can illustrate the effect by an anecdote which happened under our eyes one day, two or three years since, while waiting very patiently at the post office, for the mails to be opened. It so happened that one of the mail stages was on the point of starting off, when the driver was hailed by an honest looking farmer, who asked if his stage passed through a town about 20 miles distant. On receiving an affirmative answer, he was half way in the vehicle, when as by an instinctive impulse, he glanced at the horses; whose large, prominent ribs had been advertising for oats a long time past. Here he paused; and the driver, wondering what should keep him there, solicited him to proceed. "Not I, eheigh," was the reply; "I'll walk there, bein' as I'm in a sort of hurry." So people will not wait for a four mile an hour cart, when they have those that go five times as fast.

At the time Capt. Ross sailed from England in 1829, an eminent instrument-maker in Cornhill, placed in his hands four chronometers, for the purpose of being tried in the various climates through which he would necessarily pass. Believing no great risk would be incurred, and that Capt. Ross would return in a short time, he got them insured, but not to their full value. No news reaching England of the captain, the instrument maker demanded and obtained the amount of insurance on his articles, after the time had expired, which the laws specified—every body believing the expedition to have been lost.

With the return of Ross, however, he brought the chronometers, which, with so long a trial, had proved of almost perfect construction. The insurance office claimed their property, and though the maker offered to pay more than double the amount for which he had insured, if they would be returned, he could not recover them, so great is the value annexed to the instruments.

WEIGHT AND HEIGHT OF MAN AT DIFFERENT AGES.

In the American Journal of Medical Sciences, we find some interesting matter under the above head, taken from the London Medical Gazette, for September, 1833.

From observations made by M. Quetelet, on 63 male and 56 female new born infants, in the Maternité de St. Pierre at Brussels, it appears that the mean weight of the former was 3.20 kilogrammes, (6.536 lbs.) while the length, by Chaussier's mecrometer, was 0.496 metres, (1 foot, 6 inches, 3 lines,) and of the females, the mean weight was 2.91 kilog. (5.923 lbs.) the length was 0.483 metres, (1 foot, 5 in. 10 lines.) Whence it is inferred, that at birth there is an inequality in the weight and size of the two sexes—the male exceeding in both.

Chaussier seems the first to have remarked, that the infant, presently after birth, begins to lose its weight. This is confirmed by M. Quetelet, from seven observations, each being continued seven days, which shows that the infant does not begin to grow perceptibly till after the first week.

M. Quetelet has shown that at any period the man is generally heavier than the woman. At the age of 12, however, the weights of the two sexes are generally equal—a circumstance attributed to the earlier approach of puberty in the female.

Other of his conclusions are very curious. Man attains his maximum weight about the age of 40, and begins to lose weight very sensibly towards 60. Woman has not her maximum weight till towards 50. Between 18 and 40, she does not acquire any perceptible increase of weight.

Both, at the period of their complete developement, weigh almost exactly twenty times as much as they did at birth. Their height at the same time is about 3¼ times what it was at birth.

In their old age, both man and woman have lost 10 or 12 lbs. of their weight, and nearly 3-10ths of an inch of their height.

During the growth of both sexes, it may be stated, that the squares of the weights are as the fifth powers of their heights. After the development is complete in both sexes, the weights are very nearly as the squares of their heights; hence, the increase in height is greater than the transverse increase of the body, comprehending both its breadth and depth.

The mean weight of an individual, without reference to age or sex, is 44.8 kilog. (91.336 lbs.;) if sex be taken into account, it is 47 kilog. (96.015 lbs.) for men, and 42.5 kilog. (86.831 lbs.) for women.

According to the observations of the late Mr. Tenon, of the Institute, the Laplanders and Patagonians present the two extremes of man's stature. That of the former is generally from 4 ft. to 4 ft. 6 in.—4 ft. being their mean height; and their women are scarcely less. The Patagonians are from 5 ft. 6 in. to 6 ft. 3 in., and the women generally 7 or 8 in. shorter. The tallest men in Europe, Mr. Tenon thought were in Saxony. But he says, climate and locality have less to do with the stature of men than their race. Thus close by the Saxons we find the Silesians, who are a short people; and by

the Patagonians are the Picherais, a people much inferior in height. In Savoy, and particularly about *La-Haute Maurienne*, extreme varieties have been noticed.

Yet it can scarcely be doubted, that the climate, the nature of the soil, the sort of government, the state of civilization and the comforts of each people, or the contrary, have some influence in determining a national stature. This position has been strongly urged by M. Villermé, in his *Memoire sur la Taille de l'Homme*, and very interestingly stated by W. T. Edwards in his *Caracteres Physiologiques des Races*.

DR. GODMAN'S RAMBLES OF A NATURALIST.

Continued from page 159.

Among the enemies with which the farmers of a poor or light soil have to contend, I know of none so truly formidable and injurious as the crows, whose numbers, cunning, and audacity can scarcely be appreciated, except by those who have had long continued and numerous opportunities of observation. Possessed of the most acute sense and endowed by nature with a considerable share of reasoning power, these birds bid defiance to almost all the contrivances resorted to for their destruction; and when their numbers have accumulated to vast multitudes which annually occurs, it is scarcely possible to estimate the destruction they are capable of effecting. Placed in a situation where every object was subjected to close observation, as a source of amusement, it is not surprising that my attention should be drawn to so conspicuous an object as the crow; and having once commenced remarking the peculiarities of this bird, I continued to bestow attention upon it during many years, in whatever situation it was met with. The thickly wooded and well watered parts of the state of Maryland, as affording them a great abundance of food, and almost entire security during their breeding season, are especially infested by these troublesome creatures, so that at some times of the year they are collected in numbers which would appear incredible to any one unaccustomed to witness their accumulations.

Individually, the common crow (*Corvus corona*) may be compared in character with the brown or Norway rat, being, like that quadruped, addicted to all sorts of mischief, destroying the lives of any small creatures that may fall in its way, plundering with audacity wherever any thing is exposed to its rapacious sness, and triumphing by its cunning over the usual artifices employed for the destruction of ordinary noxious animals. Where food is at any time scarce, or the opportunity for such marauding inviting, there is scarcely a young animal about the farm yards safe from the attacks of the crow. Young chickens, ducks, goslings, and even little pigs, when quite young and feeble, are carried off by them. They are not less eager to discover the nests of domestic fowls, and will sit very quietly in sight, at a convenient distance, until the hen leaves the nest, and then fly down and suck her eggs at leisure.

But none of their tricks excited in me a greater interest, than the observation of their attempts to rob a hen of her chicks. The crow, alighting at a little distance from the hen, would advance in an apparently careless way towards the brood, when the vigilant parent would bristle up her feathers, and rush at the black rogue to drive him off. After several such approaches the hen would become very angry, and would chase the crow to a greater distance from the brood. This is the very object the robber has in view, for as long as the parent keeps near her young, the crow has very slight chance of success; but as soon as he can induce her to follow him to a little distance from the brood, he takes advantage of his wings, and before she can regain her place, has flown over her, and seized one of her chickens.

When the cock is present, there is still less danger from such an attack, for chanticleer shows all his vigilance and gallantry in protecting his tender offspring, though it frequently happens that the number of hens with broods renders it impossible for him to extend his care to all. When the crow tries to carry of a gosling from the mother, it requires more daring and skill, and is far less frequently successful than in the former instance. If the gander be in company, which he almost uniformly is, the crow has his labor in vain. Notwithstanding the advantages of flight and superior cunning, the honest vigilance and determined bravery of the former are to much for him. His attempts to approach, however cautiously conducted, are promptly met, and all his tricks rendered unavailing, by the fierce movements of the gander, whose powerful blows the crow seems to be well aware might effectually disable him. The first time I witnessed such a scene, I was at the side of the creek, and saw on the opposite shore a goose with her goslings beset by a crow; from the apparent alarm of the mother and brood, it seemed to me they must be in great danger, and I called to the owner of the place, who happened to be in sight, to inform him of their situation.

Instead of going to their relief, he shouted back to me, to ask if the gander was not there too; and as soon as he was answered in the affirmative, he bid me be under no uneasiness, as the crow would find his match. Nothing could exceed the cool impudence and pertinacity of the crow, who perfectly regardless of my shouting, continued to worry the poor gander for an hour, by his efforts to obtain a nice gosling for his next meal. At length convinced of the fruitlessness of his efforts, he flew off to seek some more easily procurable food. Several crows sometimes unite to plunder the goose of her young, and are then generally successful, because they are able to distract the attention of the parents, and lure them farther from their young.

In the summer the crows disperse in pairs for the purpose of raising their young, and then they select lofty trees in the remotest parts of the forest, upon which with dry sticks and twigs they build a large strong nest, and line it with softer materials. They lay four or five eggs, and when they are hatched, feed, attend, and watch over their young with the most zealous devotion. Should any one by chance pass near the nest while the eggs are still unhatched, or the brood are very young, the parents keep close, and neither by the slightest movement nor noise betray their presence.

But if the young are fledged, and beginning to take their first lessons in flying, the approach of a man, especially if armed with a gun, calls forth all their cunning and solicitude. The young are immediately placed in the securest place at hand, where the foliage is thickest and remain perfectly motionless and quiet. Not so the alarmed parents, both of which fly nearer and nearer to the hunter, uttering the most discordant screams, with an occasional peculiar note, which seems intended to direct or warn their young. So close do they approach, and so clamorous are they as the hunter endeavors to get a good view of them on the tree, that he is almost uniformly persuaded that the young crows are also concealed there; but he does not perceive, as he is cautiously trying to get within gun shot, that they are moving from tree to tree, and at each remove are farther and farther from the place where the young are hid. After continuing this trick, until it is impossible that the hunter can retain any idea of the situation of the young ones, the parents cease their distressing outcries, fly quietly to the most convenient lofty tree, and calmly watch the movements of their disturber. Now and then they utter a loud quick cry, which seems intended to bid their offspring lie close and keep quiet, and it is very generally the case that they escape all danger by their obedience. An experienced crow-killer watches eagerly for the tree whence the crows first start from; and if this can be observed, he pays no attention to their clamors, nor pretence of throwing themselves in his way, as he is satisfied they are too vigilant to let him get a shot at them; and if he can see the young, he is tolerably sure of them all, because of their inability to fly or change place readily.

The time of the year in which the farmers suffer most from them is in the spring, before their enormous congregations disperse, and when they are rendered voracious by the scantiness of their winter fare. Woe betide the corn field which is not closely watched, when the young grain begins to shoot above the soil! If not well guarded, a host of these marauders will settle upon it at the first light of the dawn, and before the sun has risen far above the horizon, will have plundered every shoot of the germinating seed, by first drawing it skilfully from the moist earth by the young stalk, and then swallowing the grain. The negligent or careless planter, who does not visit his field before breakfast, finds, on his arrival, that he must either replant his corn, or relinquish hopes of a crop; and without the exertion of due vigilance, he may be obliged to repeat this process twice or thrice the same season. Where the crows go to rob a field in this way, they place one or more sentinels, according to circumstances, in convenient places, and these are exceedingly vigilant, uttering a single warning call, which puts the whole to flight the instant there is the least appearance of danger or interruption. Having fixed their sentinels, they begin regularly at one part of the field, and pursuing the rows along, pulling up each shoot in succession, and biting off the corn at the root. The green shoots thus left along the rows, as if they had been arranged with care, offer a melancholy memorial of the work which has been effected by these cunning and destructive plunderers.

Numerous experiments have been made, where the crows are thus injurious, to avert their ravages; and the method I shall now relate I have seen tried with the most gratifying success. In a large tub a portion of tar and grease were mixed, so as to render the tar sufficiently thin and soft, and to this was added a portion of slacked lime in powder, and the whole stirred until thoroughly incorporated. The seed corn was then thrown in, and stirred with the mixture until each grain received a uniform coating. The corn was then dropped in the hills, and covered as usual. This treatment was found to retard the germination about three days, as the mixture greatly excludes moisture from the grain. But the crows did no injury to the field; they pulled up a small quantity in different parts of the planting, to satisfy themselves it was all alike; upon becoming convinced of which, they quietly left it for some less carefully managed grounds, where pains had not been taken to make all the corn so nauseous and bitter.

For the Advocate of Science.

In reply to the query of your correspondent S. L. respecting the ladies' tippets, I would suggest the plan of applying to them chlorine gas. This would deprive them of the odor, but at the same time would most probably change them to a white color. G.

JOURNAL OF THE WEATHER

For 12th Month, December, 1833, kept at Wilmington Del.

d.	THERM.	BAROMETER.	WINDS.			RAIN. SNOW.	OBSERVATIONS.
	○ ☽ ● ☾						
1	36 46 40	29.84 29.84 29.84	N.N.W	1	N.N.W	1	Clear.
2	38 43 3)	.98 30.01	E	1	E	1 r.	Cloudy.
3	37 40 3)	30.02 30.02	N.E	2	N.E	1	Rain.
4	37 40 3)	.09 .08	N.E	1	N.E	1	Rain.
5	38 44 3)	.12 .11	N	1	N	1 1.00	Cloudy.
6	37 44 3)	.12 .12	N.W	2	N.E	1	Cloudy.
7	34 36 36	.11 .15	N.E	2	N.E	1	Clear.
8	40 45 34	29.85 29.72	E	4	E.S.E	3	Cloudy.
9	33 44 36	.70 .75	W.S.W	2	W.N.W	1	Hail—rain.
10	31 40 36	.75 .75	N.W	3	N.N.W	2	Partly clear.
11	28 38 30	.77 .82	N.W	2	N	2	Partly clear.
12	23 31 26	.90 .92	N	2	N.W	1	Clear.
13	23 36 28	30.05 30.03	S.W	1	W.S.W	0	Clear.
14	24 26 21	29.95 29.72	N.E	3	N.E	4	Cloudy—snow.
15	26 32 23	30.16 30.05	N	4	N.N.W	2	Snow—clear.
16	26 35 35	29.94 29.90	E	5	E.N.E	4	Cloudy—snow—rain.
17	40 36 36	.10 .20	E	3	E.S.E	1	Rain.
18	36 33 33	.08 .30	N.E	2	N.E	1	Cloudy.
19	33 40 29	.34 .63	N	2	N	1	Cloudy—clear.
20	29 35 28	.80 .98	N	2	N	1	Clear.
21	25 35 31	29.99 29.90	N.N.W	2	N.N.W	2	Cloudy—hail—rain.
22	30 40 29	.87 .85	N.	2	S.E	1	Clear.
23	28 37 34	.97 .97	E.	1	N.N.W	2	Cloudy—hail—rain.
24	37 40 36	.62 .70	N.N.W	1	E	1	Cloudy—hail—rain.
25	35 40 37	.53 .43	N	2	W	2	Rain—cloudy.
26	33 38 30	.80 .85	N.W	3	N.W	2	Foggy—rain—cloudy.
27	29 34 24	.87 .87	W.N.W	4	N.W	3	Clear.
28	29 35 28	.83 .78	N.W	2	W	2	Clear.
29	26 40 29	.95 .94	N.W	2	N.E	1	Clear.
30	31 34 36	.97 .95	N.E	1	N.E	1	Clear.
31	34 42 36	.78 .74	N.W	2	W	2	Cloudy—foggy.

The foregoing observations on the thermometer, barometer and winds, are taken three times a day; at sunrise, mid day and 11 P. M.

Note.—In the column representing the force of the wind, 0 denotes calm, or nearly so, 1 a light breeze, 2 a breeze, 3 a wind, 4 a high wind, and 5 a very high wind. The letters R, T and L denote rain, thunder and lightning respectively.

SUMMARY.

Average at sunrise, thermometer	31.32°	barometer	29.87	inches.
Do. at mid-day,	do. 38.30°	do.	29.85	do
Do. at 11 P. M.	do. 32.97°	do.	29.855	do.
Monthly mean, (2 obs.)	do. 34.81°	do.	29.86	do.
Maximum, 15th)	do. 46°	do. 7th	30.19	do.
Minimum, (28th)	do. 20°	do. 19th	29.08	do.
Range,	do. 26°	do.	1.11	do.
Warmest day, 8th,	do. 42.50°			
Coldest day, 14th,	do. 25°			

Northerly Winds prevailed, (proportion,)	16 days	Whole days clear,	9
Easterly, do.	11 do.	Days on which rain fell,	11
Southerly, (S to W) do.	4 do.	" " snow "	3
Proportion of clear weather,	12 do.	Quantity of rain,	7.80 in.
Proportion of cloudy weather,	19 days	" " snow,	6. "
		" " water,	8.65 "

Observations.—An aurora on the 15th, followed in 24 hours by a tremendous easterly storm. No electrified clouds. Nine easterly storms, six of which were complete, with snow or rain. Three of these were unusually severe, and caused the destruction of much shipping on the coast, besides occasioning serious injury on account of their effect on the tides. This month was remarkable for storms. From the 14th to the 18th inclusive, a period of five days, there were not less than three distinct easterly storms. Winds unsteady and often high, varying generally between E. and W. on the northern side of the compass. The temperature of the month was very unusually uniform, not a single warm day, nor a single cold one occurring. The range of the thermometer was consequently small, being but 26°. The least range in any other month for the last six years was 31°—in August, 1828. On the other hand, the range of the barometer was considerably greater than ordinary. The navigation was not obstructed by ice. A large proportion of cloudy and wet weather, with much rain.

THE COW TREE.

Having heard of a tree, the juice of which resembles milk, and is used as an article of food, they visited it, and to their surprise found that the statements which had been made to them with respect to it were correct. It is named the *palo de vaca*, or *cow-tree*, and has oblong pointed leaves, with a somewhat fleshy fruit, containing one or sometimes two nuts. When an incision is made in the trunk, there issues abundantly a thick glutinous milky fluid, perfectly free from acrimony, and having an agreeable smell. It is drunk by the negroes and free people who work on the plantations, and the travellers took a considerable quantity of it without the least injurious effect. When exposed to the air, this juice presents on its surface a yellowish cheesy substance, in membranous layers, which are elastic, and in five or six days become sour, and afterward putrefy.

The cow tree appears to be peculiar to the littoral cordillera, and occurs most plentifully between Barbula and the lake of Maracaybo.

Among the many curious phenomena, says Humboldt, which presented themselves to me in the course of my travels, I confess there were few by which my imagination was so powerfully affected as the cow tree. All that relates to milk and to the cereal plants inspires us with an interest which is not merely that of the physical knowledge of things, but which connects itself with another order of ideas and feelings. We can hardly imagine how the human species could exist without farinaceous substances, and without the nutritious fluid which the breast of the mother contains, and which is appropriated to the condition of the feeble infant. The amylaceous matter of the cereal plants,—the object of religious veneration among so many ancient and modern nations,—is distributed in the seeds, and deposited in the roots of vegetables; while the milk which we use as food appears exclusively the product of animal organization. Such are the impressions which we receive in early childhood, and such is the source of the astonishment with which we are seized on first seeing the cow tree. Magnificent forests, majestic rivers, and lofty mountains clad in perennial snows, are not the objects which we here admire. A few drops of a vegetable fluid impress us with an idea of the power and fecundity of nature. On the parched side of a rock grows a tree with dry and leathery foliage, its large woody roots scarcely penetrating into the ground. For several months in the year its leaves are not moistened by a shower; its branches look as if they were dead and withered; but when the trunk is bored, a bland and nourishing milk flows from it. It is at sunrise that the vegetable fountain flows most freely. At that time the blacks and natives are seen coming from all parts, provided with large bowls to receive the milk, which grows yellow and thickens at its surface. Some empty their vessels on the spot, while others carry them to their children. One imagines he sees the family of a shepherd who is distributing the milk of his flock.—*Humboldt's Researches.*

Preservation of oranges.—The whole of the orange tribe, and the orange itself in an especial degree, show how well the tropical vegetables are, by a very simple provision of nature, protected from the vicissitudes of temperature. The volatile oil which is contained in the pellicles of the rind absorbs and flies off with much of the heat; and the soft white substance of which the body of the skin is composed, is almost as good a barrier against both heat and cold, as the fur on an animal or the down on a bird. In consequence of that, the orange tribe, where they are uninjured when picked, and kept out of the circumstances which resemble those in which an orange would prepare for growing in the soil, can be carried uninjured to greater dtstances, and into a greater variety of climates, than any other fruit.—*Mudie's Obs. of Nature.*

MISCELLANIES.

1. *Gladiators.*—This cruel diversion, so common among the Romans, was borrowed from the Asiatics. The gladiators were generally slaves, and they were sworn that they would fight till death. Occasionally, however, freemen made a profession of it for a livelihood; and in Nero's time it is said to have been practised by men of rank. We are informed by respectable historians that the fights of gladiators sometimes deprived Europe of 20,000 lives in one month. Constantine the Great first prohibited these combats in the east; but they were not entirely abolished in the west, before the time of Theodoric, king of the Ostragoths, A.D. 500.

2. *Food of herbivorous animals.*—Linnæus remarks, that the cow eats 276 species of plants, and rejects 218; the goat eats 449, and rejects 126; the sheep eats 387, and rejects 141; the horse eats 262, and rejects 212; and the hog, more nice in its taste than any of these, eats but 72 plants, and rejects all the rest.

3. *Discovery of comets.*—It is well known that Miss Herschel, while amusing herself in looking at the heavens through Sir William Herschel's telescope, discovered at different times a variety of comets, which might otherwise have passed unnoticed by the astronomical world; and several of the new planets which have been discovered with the last fifty or sixty years, were detected when the discoverers were employed making observations with a different object in view. The splendid comet which appeared in our hemisphere in 1811 was first discovered in England by a *sawyer*, (Mr. Veitch,) who with a telescope of his own construction, and from his *sawpit* as an observatory, descried that celestial visitant before it had been noticed by any other astronomer in North Britain.

4. *Witchcraft and its remedies.*—Josephus relates, that he saw a certain Jew, named Eleazar, draw the devil out of an old woman's nostrils, by the application of Solomon's seal to her nose, in the presence of Vespasian. Dr. Mynsight is said to have cured several bewitched persons with a plaster of assafœtida. How the assafœtida was efficacious was much disputed among the learned. Some thought the devil might consider such an application as an insult, and run off in a passion; but others very sagely observed, that as devils were supposed to have eyes and ears, it was probable they might have *noses* too.

James VI., who was famed for his polemics and theological acquirements, wrote a treatise in defence of witchcraft, and persecuted those who opposed his opinions on this subject. The pernicious effects in mines, occasioned by the explosion of hydrogen gas, were formerly imputed to the demons of the mine. Van Helmont, Bodinus, Strozza and Luther attributed thunder and meteors to the devil. Socrates believed he was guided by a demon. Dr. Cudworth, Glanville and others wrote in defence of witchcraft and apparitions. But it would be endless to detail all the foolish opinions which have been imbibed and propagated even by men who pretended to genius and learning.

5. *Fatal experiment with a diving bell.*—After the diving bell was invented, it was considered desirable to devise some means of remaining any length of time under water, and rising at pleasure without assistance. "Some years ago an ingenious individual proposed a project, by which this end was to be accomplished. It consisted in sinking the hull of a ship made quite water-tight, with the decks and sides strongly supported by shores, and the only entry secured by a stout trap-door, in such a manner, that, by disengaging from within the weights employed to sink it, it might rise of itself to the surface. To render the trial more satisfactory, and the result the more striking, the proprietor himself made the first essay. It was agreed that he should sink in twenty fathoms water, and rise again without assistance at the expiration of twenty-four hours. Accordingly, making all secure, fastening down his trap door, and provided with all necessaries, as well as with the means of making signals to indicate his situation, this unhappy victim of his own ingenuity entered, and was sunk. No signal was made, and the time appointed elapsed. An immense concourse of people had assembled to witness his rising, but in vain: for the vessel was never seen more. *The pressure of the water at so great a depth* had, no doubt, been completely under estimated, and the sides of the vessel being at once crushed in, the unfortunate projector perished before he could even make the signal concerted to indicate his distress."—*Herschel's Disc. on Nat. Phil.*

6. *New method of capturing kites,* (Falco *milvus.*)—Roosting one winter evening on some very lofty elms, a fog came on during the night, which froze early in the morning, and fastened the feet of the poor kites so firmly to the boughs, that some adventurous youths brought down, I think, fifteen of them so secured! Singular as the capture was, the assemblage of so large a number was not less so, it being in general a solitary bird, or associating only in pairs.—*Journ. Naturalist.*

7. *Structure of the wings of insects.*—It has been generally supposed that the wings of these little animals are of a single piece. A more accurate observer has remarked, that the wings of insects, though for the most part infinitely thin and transparent, are composed of two membranes, between which there is an interval provided with ærial canals. These canals, by an apparatus of incredible delicacy, communicate with their organs of respiration. The air, which fills them, being dilated by the warmth of their body, sustains them by its levity. Thus insects swim in the air, as fishes in the water.—*Flint's Lectures.*

8. *The fishing cormorant of China.*—Scarcely are the porcelain towers of the populous plains gilded with the first beams of the morning, when a lake formed by the waters of the river Luen is covered with a fleet of small boats, and adorned with ribands and streamers. The boats, pushed from the shore, are abandoned to the gentle breeze and the wave. On the yards of the masts are these birds of the most brilliant plumage. At a given signal, the æria laborers dart away, suspend themselves a moment over the unruffled bosom of the wave, to see their prey. They plunge beneath the surface and reappear each with its fish, and returns, amidst acclamations and shouts of joy, to the boat of its master.—*Ib.*

AGENTS.

Adams, Mass.—*P. Briggs,* P. M.
Bristol, Pa.—*Anthony Swain.*
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